

Expeditionary Logistics from the Sea

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Executive Summary

TITLE: Expeditionary Logistics from the Sea

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THESIS STATEMENT: There can be only one logistic infrastructure to provide attainable flexible and responsive sustainment in support of operational movement and maneuver.

BACKGROUND: While warfighting needs set logistics requirements, the logistics capabilities available for Operational Maneuvers from the Sea will, if left unrevised, limit warfighting potential and the courses of action available to field commanders.

RECOMMENDATION: The Navy and Marine Corps should create an integrated Operational Maneuver From the Sea logistics concept that supports the concept of operations at each stage in the sustainment process.

EXPEDITIONARY LOGISTICS FROM THE SEA

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PREFACE

VISION OF NAVAL EXPEDITIONARY LOGISTICS

Operational Maneuver From the Sea (OMFTS) provides the Marine Corps vision for conducting 21st-century naval expeditionary operations.¹ This vision, which seeks to exploit the sea as maneuver space, involves projecting naval expeditionary forces and power directly from the sea onto operational objectives inland. This will avert the traditional need to first seize and secure a beachhead, then build up a support base ashore before pushing out to accomplish inland operational objectives.

Naval expeditionary logistics, which is about moving naval forces and sustaining their operations in a broad array of environments, figures prominently in the new vision. The role of maritime prepositioning will be expanded from the current at-sea warehousing of Marine Corps equipment to include at-sea arrival and assembly of forces, thereby reducing the need for airfields and ports in the immediate area of operations. In order to reduce logistics demand and the logistics "footprint" ashore, many of the functions traditionally accomplished in secure rear areas ashore, such as command and control, aviation support, and logistics, will be based at sea.

¹ Headquarters, U.S. Marine Corps. "Operational Maneuver From the Sea," (Washington, DC: U.S. Government Printing Office, 1996), January 4.

The sea base itself, conceptually a collection of amphibious assault ships, prepositioning ships, and various auxiliary support ships; will remain over the horizon where logistics and other supporting functions can be performed under the security umbrella of a naval force. Rather than off-loading large quantities of supplies and equipment ashore, logistics operations will deliver tailored support packages from the sea base or from small detachments ashore to widely dispersed, highly mobile combat forces operating up to 200 miles inland.

One of OMFTS's goals is to reduce the buildup of forces and equipment ashore. Delivery and sustainment of ground forces are expected to come directly from the sea. Logistics will be central to implementing OMFTS, in fact OMFTS is a mute point without sea based sustainment. Therefore, the immediate and primary focus for the development of this evolution in amphibious doctrine must be ship to shore support. The Navy and Marine Corps must simultaneously develop OMFTS sustainment doctrine defining requirements of OMFTS sustainment, prescribing functional systems for its implementation.

I utilize a pragmatic approach to identify logistic limitation of supporting the increased emphasis on firepower and maneuver within OMFTS. The paper focuses on the constraints of Marine Delivery Systems and current utilization of US Navy assets in support of littoral warfare. The start point for developing supportability concepts for OMFTS begins by utilizing current doctrine and Marine Corps and Navy capabilities.

The search for reference material focused on books, periodical articles, Joint doctrinal publications, Army, Navy and Marine Corps doctrinal publications, Navy and Marine Corps wargames, and reports, studies and papers on the subject of Sea-Based Logistics.

The objective of this MMS paper is to establish a pragmatic order of operations for providing sustainment in an OMFTS scenario. I will demonstrate through historic development of the OMFTS concept, and current examinations of sea based logistics capabilities, that execution of sustainment development is tantamount to implementing successful OMFTS.

CONTENTS

EXECUTIVE SUMMARY	ii
PREFACE	iii

Chapter	Page
1. HISTORICAL DEVELOPMENT, A Prologue	1
2. SEA-BASED LOGISTICS	6
Sea-based Logistics - A Conceptual Overview, 6	
What is Sea-Basing, 8	
Logistic Constraints, 9	
3. PROVIDING SUSTAINMENT THROUGH SEA-BASED LOGISTICS	18
4. OPERATIONAL MANEUVER FROM THE SEA (OMFTS)	25
Definition, 25	
Combat Service Support, 26	
Demographics, 30	
Threats and Amphibious Force Vulnerability, 30	
Naval Policy, 31	
5. CONCLUSION - THE LOGISTICS INTEGRATION PLAN	32

Appendixes

A. Acronyms	38
B. Timeline of Developments in Sea-based Logistics	39

Bibliography

Essay on Sources	40
Source Documents	45
Books	45
Doctrinal Publications	46
Periodicals	47
Government Agency Plans, Papers, and Studies	49
Non-Government Studies	51
On-Line Resources	51

CHAPTER 1

HISTORICAL DEVELOPMENT

A Prologue

The operating forces are served by a support organization that begins at the loading dock of the manufacturer in the United States and ends up when the required materiel or service is delivered at the right place, at the right time, and at the right cost. Only with a properly sized and structured Naval logistics force, both afloat and ashore, can the operating forces meet their forward presence and war-fighting objectives.¹

In the Pacific, during World War II, as in the other theaters, close examination reveals the extent to which logistic sustainment, technique and mobility had to be developed to capitalize on the modern warfighting (air and sea power) to exploit the advantage of speed, range, and flexibility. The key to victory in the Pacific campaign of the Second World War was the development of logistic mobility to exploit an enemy that had over extended his operation. This could only be accomplished by developing logistic techniques to support maneuver and movement, and then sustain the force for further operations.

The ability to project this power in the Pacific would require sustainment from the sea and great innovation of Naval logistics. The Navy established mobile service squadrons with unprecedented resupply capabilities.

During the preparatory period for [the]
Galvanic [campaign to capture Tarawa], the idea of

¹ NLWG-2007 Exec Summary, 3.

giving logistic support from floating mobile bases had been approved, but it was not until November 1943 that the first unit, Squadron Four, under Captain Skull, came into active operation Admiral Nimitz ordered Commander Service Force to organize two mobile service squadrons. The idea was that as it advanced across the Pacific the fleet would base on one, capture its next objective, and thereupon bring up the second. It would base on the second until still another forward area had been gained, whereupon the first service squadron would leapfrog over the second, and so on alternately.²

The Navy utilized mobile platforms, ships and barges that carried all classes of supply, to include sophisticated maintenance capabilities. To overcome amphibious logistics problems, new procedures and equipment were developed to maintain and support the amphibious operations ashore for the Pacific War. Effective use of amphibious logistics in the Pacific centered on the requirement to rapidly project combat power ashore, then rapidly build sustainment and infrastructure to allow for continuous expansion of the lines of communication.

The national and military leadership built the strategic sustainment to fight in the Pacific War. The operational challenge was to deliver the sustainment by sea to remote and isolated combat zones in a region with no infrastructure existing to accept and distribute the sustainment. To an extent never before contemplated in military history, the naval nature of the Pacific operations

² U. S. Marine Corps War College Pamphlet, *The Story of Fleet Logistics Afloat in The Pacific During World War II - Beans Bullets and Black Oil* (Quantico, VA: Marine Corps Combat Development Command, 1998), 90.

demanded logistic support that could cover vast distances rapidly and support combat operations by both sea and air.

The Pacific environment and methods of logistic support were such that the United States was forced to project conventional combat force over thousands of miles of ocean. Two types of vessels were developed: combat loaders and various types of landing craft. Loaders designed to carry specific types of equipment would carry cargo as close to the beach as possible. Landing craft would generally drive their cargo right onto the beach. These vessels became critical to tactical decision making during Pacific operations. Perhaps one of the most ingenious methods of naval logistics in the Pacific campaign was the mobile dry-dock which delivered fuel, ammunition, supplies and repair facilities afloat to fleet ships deployed. These innovations provided the commander the logistic sustainment needed to maneuver almost indefinitely without returning to fixed locations. The ability of amphibious planners to readily adapt to island warfare allowed for continuous logistic capabilities to support fire and maneuver. The logistic mobility developed in support of the Pacific campaign allowed for Naval forces to successfully wage war as had no other military force in history.³ The dilemma of logistic operators, as stated by military historian Martin

3 AFLMC, 122

Van Creveld⁴, is that at the national level strategic sustainment is prepared based on industrial consistency, lack of variation, uniformity and all forms of efficiency. At the tactical level uniformity and consistency are unattainable. This is the direct opposite of what the tactical level logisticians need. Therefore the operational level logistician bears the burden of taking the strategic level efficiency and making it effective at the tactical level.

This dilemma strikes at the heart of what made the Pacific war successful. After the US achieved strategic sustainment, the operational logisticians developed campaign plans that converted the vast US industrial capabilities into a delivery system that was effective down to even the smallest atoll.

Nations win wars by campaigns that project combat capabilities and logistic sustainment. The ability to provide mobility and sustainment led to the victorious outcome of the Pacific campaign. Once the Pacific theater began receiving more equipment and could utilize this through a sophisticated logistics system, it was only a matter of time until the defeat of Japan was complete.

The development of amphibious doctrine during the Pacific campaign was based on logistic sustainment. The

⁴ Martin Van Crevald, *Supplying War: Logistics from Wallenstein to Patton*, (New York: Cambridge University Press, 1977).

United States learned through experience the fundamental tenets of sea-basing. The science of resupplying at sea developed in the Pacific campaign provided the principles of sustainment that will allow for the integrated development of sea-based logistics in future naval expeditionary operations.

CHAPTER 2

SEA-BASED LOGISTICS

Sea-based Logistics - A Conceptual Overview

This concept describes the operational and tactical sustainment of forces operating on and from the sea. It is a concept to support forces that are naval in character, but trained, organized, and equipped to operate as an integral part of a joint force ashore. The concept describes a means to support littoral power projection from over the horizon, independent of sovereignty restrictions and overseas basing requirements.

Our naval forces remain a primary instrument of a National Military Strategy (NMS) to project power, protect interests, promote peace, and provide humanitarian relief. They operate in an increasingly unstable world where regional tensions have been liberated from the restraining influences of the bipolar Cold War era. As sophisticated weapons proliferate in this environment, stationary forces and forward lodgments will become more vulnerable. The future battlefield will be characterized by coordinated speed of maneuver, increased operating ranges, and precision delivery of massed effects. Sea-based Logistics (SBL) offers the unique capability to both sustain the future high operational tempo of the battlefield and exploit the advantages inherent in mobility and over the horizon standoff.

SBL proposes methods to support a full spectrum of littoral operations that directly and decisively influence events. It outlines implementing capabilities for Operational Maneuver from the Sea (OMFTS) while retaining joint inter-operability in naval doctrine and actual practice. This concept embraces the best existing and emerging commercial processes to expand the range, speed, and magnitude of tactical and operational sustainment. A primary enabler will be the coupling of sea-based ship-to-objective distribution with network-based, automated logistics information to provide in-stride sustainment for maneuvering and fighting naval expeditionary forces. SBL must be flexible and suitably robust to overcome asymmetrical and challenging operational environments.

Reducing or eliminating the logistics operation on shore will be the primary thrust of SBL. It will allow the logistics base to maneuver at sea with the operating forces. It will reduce double handling of materiel by cutting out the intermediate step of establishing shore-based logistics activities and eliminating the operational pause associated with that effort. Other advantages include reducing the forces' vulnerability by saving manpower, time, and money.

Since OMFTS changes the means of employing combat power, traditional amphibious Combat Service Support (CSS) techniques need to be modified to meet the unique logistic demands of OMFTS. The most prominent feature of SBL is that it supports combat units directly from ships instead of building a logistic infrastructure ashore.

What is Sea-basing

As defined by the Marine Corps, SBL is "the deliberate, managed provision of support to LF/MAGTF [Landing Force/Marine Air-Ground Task Force] units ashore from ships off shore."¹ This definition is broad enough to avoid imposing limits as to the process or methods to be used, giving the commander and the logistician a measure of flexibility as to how the force will be logistically supported. However the success or failure in using SBL can be narrowly defined by how well supplies, equipment, and personnel move through the logistic system, which in turn influences a commander's ability to accomplish a mission. However, one of the main tenets of OMFTS is an effort to reduce the logistics buildup ashore by keeping a precise quantity of combat service support infrastructure, services, and supplies at sea.²

¹ U. S. Marine Corps, *Combat Service Support Operations*, FMFM 4-1, (Quantico, VA: 1993), 13-33.

² Concept Division, MCCDC, *Precision Logistics Concept*, Appendix A. *The Spectrum of Logistics*, Quantico, VA, 29 August 1995, A-3.

Logistic Constraints

"Logistics is governed by immutable laws. Material has mass, and the movement of mass requires effort. The movement of mass over distance requires time, which is determined by the speed of movement."³ This may seem simplistic, but these laws govern the delivery of logistics just as they govern an aircraft in flight or a ship moving on the sea. OMFTS attempts to mitigate their effects by changing the logistic paradigm. "Without the capability for matching mobility, combat service support units are destined to form large static combat service support areas in close proximity to ports or airfields."⁴ OMFTS is shifting the focus of logistics to finding new methods of CSS distribution and storage techniques.

What distinguishes OMFTS from all other species of operational maneuvers is the extensive use of the sea as a means of gaining advantage, an avenue for friendly movement that is simultaneously a barrier to the enemy and a means of avoiding disadvantageous engagements. The aspect of operational maneuver from the sea may make use of, but is not limited to, such techniques as SBL, sea-based fire

³ Concept Division, MCCDC, *Precision Logistic Concept*, A-8.

⁴ Chief of Naval Operations, Expeditionary Warfare Branch, N85, *Concept for CSS and Maneuver Warfare 1993*, 3 January 1995, 14.

support, sea-based Command and Control, and the use of the sea as a medium for tactical and operational movement.⁵

OMFSTS uses the sea to move forces where they can have the greatest effect with the least risk. It requires an assault and resupply capability that extends two hundred miles inland. To sustain OMFSTS forces that distance from amphibious shipping requires a robust transportation and distribution system. "This (OMFSTS) distribution system must have a throughput capability beyond that provided by existing surface, rotary wing, or anticipated tilt rotor assets,"⁶ or high speed, high capacity lighterage.

The key to making the logistic distribution system effective is the application of accessibility. While the Marine Corps has years of experience in spread-loading supplies throughout the amphibious task force, accessibility has never before presented a problem since all supplies have been available in break-bulk storage or put ashore in a beach support area (BSA) for later distribution to units:

Sustainment of OMFSTS thus requires two major assets not now in existence: (1) a true functional sea-based configuration of assets capable of providing throughput of material to combatants, using dynamic selective offload procedures; and (2) an effective transfer, heavy air-lift cargo transfer system for effective ship-to-shore movement of both wet and dry cargoes.⁷

⁵ U.S. Marine Corps, *Coordinating Draft, Operational Maneuver from the Sea*, (Quantico, VA: 25 April 1995), 5

⁶ LtGen Anthony Zinni, Gary Johnson and Shujie Chang, *OMFSTS: The Combat Service Support (CSS) Challenge*, n.p., 1 June 1994, 5.

⁷ *Fleet Operational Needs Statement for an Operational Maneuver for the Sea Logistics Capability*, 28 March 1994, 1.

The efforts to make sea-basing work must focus on either reducing the logistic demands of ground units and/or expanding the capability to transport logistics over increased distances by air and surface.

Operational logistics is the link between strategic logistics and tactical combat service support, "...balancing current consumption with the need to build up logistical support for subsequent operations, lengthening lines of communications, and staging logistics support forward to maintain the tempo of operations."⁸ Since operational logistics exists at the theater level, it is inextricably linked to operations; hence, it determines what is possible and what is not. Consequently, the relationship difference between logistics and other operational functions is simple: that logistics can and will govern what is militarily achievable. "Logistics governs what can, and perhaps more importantly, what cannot be accomplished by an operational level commander in a theater of war."⁹ Operational logistics is at once an enabling function for the success of military operations, and a force multiplier that can provide a military force a decisive advantage. Therefore military

⁸ Joint Military Operations Department, "Operational Functions", NWC 4103, U.S. Naval War College, Newport, RI: August 1996, 29.

⁹ C.R. Newell, "Logistical Art," *Parameters*, March 1989.

operational planners should logistically prepare the theater¹⁰ at the beginning of the planning process.

Military operational planning will always be influenced by three critical logistical factors: requirements determination, sustainment, and distribution within the theater. As FMFM1-1 *Campaigning* stresses, "...a campaign plan that can not be logistically supported is not a plan at all, but simply an expression of fanciful wishes."¹¹ Consequently, the operational commander must first insure his logistical and operational planners work in concert, planning backwards from the objective, to determine logistical requirements and define the logistics focus of effort. Second, sustainment is "the provision of personnel, logistics and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or the national objective."¹² Constant interface between the staff planners is required to insure sufficient sustainment is produced for the operational forces. The third critical factor is the distribution system, which ranges from the continental United States (CONUS) to the forward area of the theater. The distribution capability of the sustainment effort

¹⁰ U.S. Army, *Operations*, FM 1005-5 (Washington, DC: 1993), 12-5.

¹¹ U.S. Marine Corps, *Campaigning*, FMFM1-1 (Washington, DC, 1990), 78.

¹² Joint Publication 4-0, *Doctrine for Logistic Support of Joint Operations*, (Washington: 1995), GL-8.

influences the reach of an operational commander by enabling the consistent delivery of logistical support throughout the operation.

The three critical factors, when combined, form the sustainment process which is the crux to successful military operations of any duration. Sustainment is the over-arching concept that focuses logistical efforts for the level and duration of operational activity required to achieve campaign or major operation objectives.¹³ The author of *On War*, Carl Von Clausewitz defines the importance of understanding the culminating point as the difference between loss and gain, defeat or victory. The limits of one's attack must be clearly defined during the planning process of the campaign and objectives established accordingly. This facilitates the proper balance of combat power. Clausewitz noted the difficulty in recognizing the culminating point when he stated, "If we remember how many factors contribute to an equation of forces, we will understand how difficult it is in some cases to determine which one has the upper hand."¹⁴ The concept of the culminating point should be part of the operational

¹³ Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated terms*. (Washington: 1994).

¹⁴ James D. Coomler, *Clausewitz and its Application in the Gettysburg Campaign*, (Washington, DC: U.S. Army War College, April 1993), 91.

mind-set, and it should be used conscientiously."¹⁵ The operational commander must realize that operational sustainment is a critical action, within the operational design, for the successful planning and execution of campaigns and major operations. The commander's overall goal should be to plan for and achieve logistics momentum, to enable military operations to maintain the tempo and extend his reach. Specifically, it is the sustainment process that determines the operational reach of, and governs the operational tempo for, the combat forces.

However, more often than not, it is the lack of operational sustainment which causes an operating force to reach its culminating point. Therefore, the degree of logistical affect on operational tempo, and subsequently operational momentum, is dependent on the responsiveness and flexibility of the sustainment process to the operational commander's intent and concept of operations. Consequently, the synchronization of sustainment actions such as resource scheduling, staging, transport, and distribution of supplies to combat forces before they reach the culminating point is important for responsive operational logistics.¹⁶

Sequencing precision logistics sustainment events over lines of communication (LOC) from CONUS, forward to the SBL

¹⁵ Carl Von Clausewitz, *On War*, indexed ed., eds. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 566.

¹⁶ Geoffrey W. Stokes, Major, USMC, *Sea-Based Logistics: A Concept Just Over the Horizon*, Naval War College, Newport, RI, 13 June 1997. 3,4.

platform, could result in a reduction of land-based resources. Through theater intermediate bases for support of staging and prioritizations, the elimination of a large materiel operation on land, reduces the build-up of logistical personnel necessary to manage it.¹⁷ A smaller land presence reduces the security force size required to protect it from local enemy forces and economic intruders. As a result, fewer combat service support personnel and perhaps subsequently combat forces, may be required to carry out support missions. Additionally, reducing the logistical demands on infrastructure frees the small port or air facilities for priority use by combat forces introduced into theater.

The aim of the sea-basing concept is to provide tailored and timely logistics support without the inherent vulnerabilities of fixed sites ashore. Creating an efficient *pull* system of supply from operational resources,¹⁸ and a *push* system that anticipates requirements by development of self diagnostic programs. In this manner the operational commander will be able to project power ashore without the need to establish a large sustainment ashore. By providing floating facilities off-shore to process personnel and materiel, SBL can be the means

¹⁷ Van-George Belanger, "Operational Sustainment--A Means, Ways, and Ends Paradigm Governing Joint Military Operations," Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1996, 8.

¹⁸ Edward J. Walsh, "Marines Look Ahead to Mobility, Firepower Upgrades," *Sea Power*, November 1996, 32.

necessary within an austere land or maritime environment to assist operating forces achieve the desired end.¹⁹

Imbedded within the concept of reducing the buildup of a large land based logistic distribution system is, "The deliberate managed provision of all Combat Service Support to combat forces ashore from ships off-shore."²⁰ Consequently, providing all CSS from the sea-based logistical platform negates the need for a large build-up ashore. Therefore, SBL could eliminate fixed logistics points and perhaps allow numerous small, mobile CSS detachments ashore. While today's SBL could provide all CSS based at sea in a small operation, major operations will use infrastructure such as ports and airfields. Small CSS detachments ashore could assist in coordinating and executing throughput of precision logistics, without being hindered or tied to fixed supply distribution points and fuel farms on the beach, near an airfield, or at an operating port. Small and mobile by design, the CSS detachments would maneuver with SBL platforms within the littoral area or be retracted from shore.

Today's throughput capability limitations will require the use of an intermediate staging base within theater for processing commercial cargo ships. The inability to receive and process *containerized cargo* with the current

¹⁹ Belanger, "Operational Sustainment...", 5.

²⁰ Center for Naval Analysis, Marine Corps Operations Analysis Group, "Supporting Amphibious Assault from a Sea Base," CRM 91-6 (Alexandria, VA 1991), xx.

configuration of ships available to form forward sea-based platforms, requires an intermediate staging base to break down shipped materiel into a distributable form that the forward sea-base uses for distribution and delivery to the operating forces on land. An efficient throughput of containerized materiel must be coordinated over the sea LOCs from CONUS, for processing at an intermediate base and then moved on to a forward sea-base for distribution ashore.²¹ Therefore, the sea-based logistic concept must be integrated into the overall sustainment process at the strategic, operational, and tactical levels.

²¹ Stokes, *SBL: A Concept Just Over the Horizon*, 12.

CHAPTER 3

PROVIDING SUSTAINMENT THROUGH SEA-BASED LOGISTICS

Sea-based Logistics requires implementation of five fundamental tenets associated with operations and sustainment:

1. operating from a base at sea vice establishing shore-based operations,
2. refining our operational and logistics posture to improve efficiency,
3. ship to objective logistics,
4. retain the capability of integration with joint theater logistics, and
5. combining on all the others, building and reconstituting combat power at sea.¹

Strategic airlift and aerial delivery will replenish forces operating inland. Surface transport, carrying land mobile combat service support forces, will discharge logistics trains that will operate with maneuver forces, allowing lines of communication to close behind them. Replenishment of bulk fuel, water, and supplies will be accomplished vertically or via surface transport on reopened

¹ Marine Corps Combat Development Command, Naval Doctrine Command. *"Sea-based Logistics. A 21st Century Warfighting Concept, Marine Corps Gazette.* Quantico, VA: Marine Corps Association. November 1998, A-1, A-2.

ground supply routes. Caches of logistics support items will be established at selected locations for rendezvous with maneuver forces. Forward arming and refueling points (FARPs) will be established through aerial delivery or by mobile ground units deployed ashore. Loitering theater and strategic airlift will provide on-call airdrops of prepackaged resupply guided by Global Positioning System steerable parafoils. Unmanned aerial vehicles offer the potential of expanded delivery options.²

Selective offload will be the core of sea based support. The sea base will essentially serve as a primary distribution center with the capability to trans-ship cargo from containers and distribute ready for issue materiel to forces ashore.

Current amphibious doctrine, Marine Corps FMFM4-1, *Combat Service Support Operations*, requires establishing a Beach Support Area (BSA), whether it is a general off-load of amphibious ships or a Joint Logistics over-the-shore (JLOTS) operation from maritime pre-positioned vessels or commercial cargo ships. Building and expanding a BSA is a time consuming, labor and equipment intensive task as supplies are put ashore. A multitude of facilities may be built, such as ammunition supply points, fuel farms, supply depots, hospitals, transportation hubs, billeting areas, showers,

² "Sea-based Logistics. A 21st Century Warfighting Concept", *Marine Corps Gazette*, A-3.

laundries, mess halls, and expeditionary airfields. While helicopter support is available to move emergency logistic requests during the initial build-up, the vast majority of equipment and supplies require movement from ships to the BSA by landing craft.

As the plethora of logistic materiel arrives, the need for space dramatically rises. The BSA disperses to cover hundreds of acres as the facilities to maintain combat operations expand. But this expansion increases the vulnerability of the BSA and its logistics infrastructure. While the force is embarked and miles out to sea, it is relatively immune from land attack. The ability of the Navy to conduct fire and maneuver at sea offers a more secure defense option than stationary land targets. Once ashore the BSA becomes susceptible to attack, capture or interdiction due to its immobile nature. Therefore, sea basing offers an alternative to traditional amphibious logistic support by balancing the risk of putting a large, exposed, logistics operation ashore against the CSS principles of timely and efficient resupply by keeping most, if not all, CSS functions based on ships. Eliminating the logistics operation ashore is critical to the application of OMFTS. The successful use of SBL will depend upon two interrelated distribution components: methods of delivery and methods of packaging.

A major constraint in sea based operations is the ship-to-shore delivery method. Once ashore in traditional amphibious assaults, combat units have a direct link to the BSA. Logistic support can be delivered at all hours, in almost any weather conditions via land or air transportation. By dissolving the BSA and relying on SBL, the source of logistics is protected; however, the logistic pipeline becomes a critical vulnerability since the primary logistic link is by air transport. This has the potential to alter the commander's tactical decisions to ensure a reliable logistic flow.

The distribution system (pipeline for logistics) is the critical focal point for providing timely and sufficient CSS within OMFTS operations:

The pipeline consists of numerous carriers between the provider and the user. Portraying the system as putting the item from the ship into the hands of the Marine is false. In this oversimplification assets are overlooked. Second, inventory management is not applied throughout the pipeline.³

Logistical considerations include:

Maintenance: Equipment requiring maintenance beyond operational intermediate depot level will be evaluated by turn-around resupply shipping. Maintenance policy will incorporate, as much as possible, the use of modules, component replacement and maintenance floats. Maintenance contact teams will be helo-lifted ashore as required.

³ Chief of Naval Operations, Maneuver Warfare 1993, 13.

Medical: Casualties will be evacuated by helicopter to a designated casualty receiving ship, where they will be treated, sorted and assigned to other ships with medical facilities for definitive care commensurate with the needs of each casualty. Navy Surgical teams staffed with sub-specialists will provide care in such areas as thoracic surgery, neurosurgery, and opthamology. A portion of the MAGTF aid station will remain afloat and provide medical administrative management of outpatients. Service members killed in action will be processed by a graves registration team and evacuated out of the objective area by C2A aircraft from a carrier.

Service: Laundry, bathing, exchange facilities, postal service, and disbursing will be handled afloat.

Salvage: Salvage collection points will be established ashore. Salvageable material will be retrograded afloat.

Shore Party operations: Shore Party personnel will operate the landing zones at the combat and fire support bases, and support Landing Craft Air Cushion (LCAC) operations. Helicopter Support Team riggers will be spread over supply ships to rig daily resupply requirements.

Some of the specific techniques required in a sea-base operation will now be examined. The biggest single requirement is the streamlining of logistics procedures so that they are responsive to the landing force commander when he doesn't have the luxury of an extensive support area ashore. In seabase there should be no general unloading.

Everything should be unloaded selectively. Logistic planning must be continuous throughout and must provide for constant monitoring of needs versus materiel and means. It must, perforce, be a constant process of decision. It must be flexible and responsive. It must be a system which fulfills the following criteria: the amounts of supplies and equipment must be packed and compartmentalized to efficiently fit aboard ship. This requires a detailed and accurate forecast of usage requirements within a very small percentage of error.

Today's sea-based logistical platforms are a collection of ships and systems that provide good sustainment attainability, but a poor capability to distribute resources ashore.⁴ For example, the capability of several logistical ships and systems, such as the Combat Logistics Fleet, Maritime Pre-positioning Force, and Joint Logistics Over the Shore, have been proven individually in numerous training exercises and contingency operations. Positioned together in an over-the-horizon location, the combined strengths of these ships as sea-based logistical platforms are as follows:

- 1) Provide a centralized base for control of operational logistics within theater.

⁴ Col James Strock, USMC, Logistics Integrator for Marine Corps Combat and Development, interview with Maj Stokes, 20 Dec 1996.

2) Provide a co-location of logistical planners for efficiency and flexibility.

3) Current capability to support Military Operations Other Than War.

However, more than a few weaknesses are also apparent:

1) An inability for cross-decking or inter-ship transfer of supplies.

2) An inability to receive and process for distribution follow-on containerized cargo.

3) A lack of dedicated fast ship-to-objective delivery assets for both air and surface.

4) Deficient ground equipment maintenance capabilities.

5) An inability to support multi-helicopter operations.

6) An inability to receive military transport aircraft.⁵

Consequently, a critical weakness for sea-based logistics today is materiel throughput. A redesigned integrated logistics system must span the full set of CSS function from the tactical level requirement to the CONUS based strategic levels. The concepts of OMFTS require sustainment that deliver to highly mobile and dispersed combat elements. This requires integration of multitudes of diverse activities.

⁵ Center for Naval Analyses, "Supporting Amphibious Assault From a Sea Base," xi.

CHAPTER 4

OPERATIONAL MANEUVER FROM THE SEA (OMFTS)

The U.S. Marine Corps concept for the projection of Naval power ashore is *Operational Maneuver From the Sea* (OMFTS). Like the U.S. Navy and U.S. Marine Corps white paper, *Forward ... From the Sea*, it emphasizes the world's littoral regions as areas of potential conflict, and a potential role of the Naval Expeditionary Force (NEF) in such conflicts.

Definition

Operational Maneuver from the Sea is the application of maneuver warfare to amphibious doctrine.¹ Using the sea as maneuver space, OMFTS uses opportunistic and seamless maneuver against carefully selected operational objectives that ultimately disrupts the enemy's cohesion and destroys their will to resist. OMFTS applies the philosophy of maneuver space that allows the amphibious force to project power ashore.² Naval forces take advantage of the unrestricted operational mobility of their lift assets in

¹ Maj Michael A. Shupp, USMC, "Is a Marine Expeditionary Unit Capable of Conducting Operational Maneuver from the Sea?" Unpublished Thesis, U.S. Marine Corps Command and Staff College, (Quantico, VA: 1997), 10.

² LTG John H. Cushman, U.S. Army, Ret. "Maneuver ... From the Sea," *U.S. Naval Institute Proceedings*, Volume 120, No. 8, August 1994, 31.

the Amphibious Task Force (ATF) to carefully choose the time and place to penetrate the littoral.³

Maneuvering to strike an opportunistic attack, OMFTS seeks to find exploitable vulnerabilities of the enemy and avoids striking into the strength of the enemy's defenses. In theory, the sea is an obstacle to the enemy's maneuver, but the ATF's capabilities, the amphibious assault, seeks to penetrate into the very heart of the enemy.⁴ Thus no longer does the amphibious assault seek limited objectives, establishing a beachhead to build future operational sustainment.⁵

Combat Service Support

Combat Service Support is applied operational logistics. The Objective of CSS is to sustain and enhance the relative combat power of the force at the tactical level of war. This equates to the ability to maintain and sustain organizations and equipment --the firepower and mobility assets--of the force.

The principles governing the conduct of CSS operations are constant. However, commanders must modify their application depending on the specific operational

³ CDR Terry C. Pierce, U.S. Navy. "Operational Maneuver From the Sea...Making it Work," *Marine Corps Gazette*, Volume 77, No. 10, October 1993, 61.

⁴ Pierce, "Operational Maneuver From the Sea," August 1994, 31.

⁵ General Carl E. Mundy Jr., USMC, (Ret.). "The United States Marine Corps--A Capable Force For A Dynamic International Security Environment." *NATO's Sixteen Nations*, Volume 37, No. 6. 1992, 46.

environment and on advances in the technological means of war. The seven principles of CSS are responsiveness, simplicity, flexibility, economy, attainability, sustainability, and survivability. The tactics and techniques for employment of a new capability must be compatible with the technological development itself. The principles of CSS are guides for planning, organization, management and execution.⁶

OMFSTS requires efficient, secure and timely delivery of service support from sea-based and limited ashore facilities to maintain operational tempo.⁷ It requires Combat Service Support (CSS) capabilities that are responsive to the needs of maneuver elements. The OMFSTS concept avoids the CSS concentration ashore by Sea-Based Logistics (SBL) kept beyond the reach of the enemy. It avoids presenting a lucrative target that will require security forces that tie the commander to a self-imposed tether. Through SBL the MAGTF commander is unhindered and free to concentrate on striking the enemy. The challenge remains in providing the right CSS at the right time.

The primary challenge is to work out the techniques and procedures to increase the efficiency of delivery. For

⁶ USMC, FMFM4-1, *Combat Service Support Operations*, 1-4.

⁷ Operational Maneuver From the Sea: A Concept for the Projection of Naval Power Ashore. Quantico, A-6.

example, these techniques would have to consider unit daily packaging in pre-staged lifts, cross-decking, lift movement tasking, and unit distribution.

One tenet of OMFTS is to reduce the build-up of forces and equipment ashore. Delivery and sustainment of ground forces is expected to come directly from the sea, primarily by air. This means that sea-based logistics assets remain sufficiently close to shore to allow air assets (CH-53E, MV-22) to conduct resupply operations directly to the battlefield. One implication of this is that Navy ships may have to sacrifice operational and perhaps tactical mobility to sustain shore-based operation.

Our capstone operational concept, "Operational maneuver from the Sea" is the engine driving our current modernization efforts and directly shaping current doctrinal thought and development.

General Charles Krulak, USMC
1996 Posture Statement to the
Senate Armed Services Committee⁸

This statement by the Commandant of the Marine Corps to the Senate Armed Services Committee establishes Operational Maneuver From the Sea (OMFTS) as the approved concept for employing amphibious power. OMFTS is the concept that supports the current strategic policies of the Navy and Marine Corps established in "...From the Sea" and "Forward...From the Sea" that commits Navy and Marine Corps forces to a littoral focus and the power projection from the

⁸ Charles Krulak, General, USMC, "Navy 1996 Posture Statement to the U.S. Senate Armed Services Committee," *Marines*, Volume 25, Issue 4. April 1996, 4.

sea to meet the challenges of the future. OMFTS concept is a natural evolution of amphibious doctrine, an extension of the Marine Corps' *FMFM-1 Warfighting* that focuses warfighting on maneuver warfare.⁹ By applying maneuver warfare to amphibious doctrine, the Marine Corps moves away from the costly World War II Pacific style of amphibious warfare that relied so heavily on saturations of fire followed by a deliberate and methodical daylight frontal assault to establish a beach foothold.¹⁰

Many Marines studying OMFTS feel that it can only become a reality with the procurement of the MV-22 Osprey and the Advanced Assault Amphibian Vehicle (AAAV), and the already operational LCAC vehicle--the Short Take-off and Vertical Landing (STOVL) variant of the Joint Strike Fighter (JSF) will provide fire-support critical to the success of OMFTS. This interpretation is apparent in the 1998 Marine Corps Concepts and Issues notice.¹¹ Clearly, technological advances are enabling the Marine Corps to rapidly advance OMFTS from the concept stage to reality.

Demographics

⁹ CDR Terry C. Pierce, U.S. Navy. "The Tactical-Strategic Link." U.S. Naval Institute Proceedings, Volume 116, No. 9. September 1990, 66.

¹⁰ Col Theodore L. Gatchel, USMC (Ret.), "A Matter of Style: Varying Approaches to the Challenges of Amphibious War," *Marine Corps Gazette*, Volume 76, No. 11. November 1992, 59.

¹¹ U.S. Marine Corps, *Concepts & Issues '98: Building a Corps for the 21st Century*, Headquarters, U.S. Marine Corps Programs and Resources Dept., (Washington, DC: 1998), 33.

The most likely areas requiring a military response to protect U.S. interests are the world's centers of population, government and trade found on the littorals. The littoral area defined is the 200 mile belt of land adjacent to and linked to the oceans. Studies indicate the relevance of power projection from the sea when approximately 75% of the world population live within 200 miles of the world's oceans.¹² This area also contains 80% of the world's capitals and nearly all of the international marketplaces.¹³ By limiting overseas basing, the United States continues to respect the territorial integrity of the nations of the world...but we also realize the ever increasing conditions of instability that might require a crisis response from the sea.

Threats and Amphibious Force Vulnerability

The proliferation and lethality of Precision Guided Munitions (PGM), mines, and Weapons of Mass Destruction (WMD) demand a shift from the attrition concept of amphibious warfare.¹⁴ As more and more nations acquire these extremely lethal weapons the vulnerability to concentrated amphibious forces increases.

¹² "Commentary on OMFTS." *Marine Corps Gazette*, Volume 80, No. 7, July 1996, 14. quoted from Major Michael A. Shupp.

¹³ "Operational Maneuver from the Sea: A Concept for the Projection of Naval Power Ashore", *Marine Corps Gazette*, June 1996, A1.

¹⁴ Maj Jon T. Hoffman, USMC. "The Future is Now." *U.S. Naval Institute Proceedings*, Volume 75, No. 3. November 1995, 29.

Naval Policy

Faced with shrinking defense budgets and reduced manpower levels, the leadership of the Navy and Marine Corps must meet the stiff challenge of increasing their efficiency through the refinement of doctrine. The concept of OMFTS shifts Naval doctrine from the Mahanian blue water strategy to a focus on the littoral power projection in future regional conflicts.¹⁵ Through ...*From the Sea, Forward...* *From the Sea*, Naval Doctrinal Publications, and Fleet Marine Force Manual-1, naval policy established an expeditionary focus with maneuver as the preferred warfare approach. This laid down the foundation of OMFTS.¹⁶

¹⁵ Carl E. Mundy, Jr., General, USMC (Ret.) "Coping with Change: The Department of the Navy and the Future." *Strategic Review*, Volume 22, No. 1 Winter 1994, 23.

¹⁶ LtGen Bernard E. Trainor, USMC, "Still going...Amphibious Warfare." *U.S. Naval Institute Proceedings*, Volume 118, No. 11, November 1992. 31.

CHAPTER 5

CONCLUSION

The Logistics Integration Plan

The key to victory in the future will be to develop logistic techniques to support OMFTS and to sustain the force for further operations.

There are some important issues that must be addressed in redesigning the logistics system to sustain forces ashore.

It will be necessary to immediately begin to integrate the Navy and Marine Corps logistic system to form Naval Expeditionary Logistics. Once the Navy Expeditionary Logistics system is integrated, detailed understanding of modernizing ship to shore delivery systems and sea-based logistics ships will be possible. These issues, however, must not be approached or resolved piecemeal. They must be addressed in the context of a systems concept of combat service support for future expeditionary operations.

Both the Navy and the Marine Corps must participate in creating this support concept. It would span the full set of combat service support functions, reaching from the Marine at the outer edge of the battlespace back to the CONUS sustaining base. The development would need to

include: assessing organizational, procedural, and equipment needs; implementing an integrated Navy and Marine Corps (blue/green) logistic strategic planning process; establishing a design for the operating concept; designing new distribution equipment; and designing interactive information systems for distribution. Such a concept does not yet exist.

Now is the time for the Navy and Marine Corps to jointly examine their current capabilities. Both organizations must make necessary adjustments to avoid redundancies. In the current austere environment, financial resources must only be committed after completing logistic integration. Once true integration is achieved, the Navy and Marine Corps concept of logistics will facilitate the development of systems and sea-basing vessels to support OMFTS, such as these listed below:

1. **Integrated Naval Expeditionary Logistics:** Ongoing technological developments such as the global command and control system (GCCS), to allow the seamless integration of organizations that provide logistical support to the MAGTF.

- a. Fully integrate the Navy and Marine Corps logistic systems in order to better utilize limited resources and provide more responsive support to Naval forces. Common materiel support pipelines, integrated

inventories, and common management support systems should be the goal.

b. Modularize cargo moving from large containers to the sea base to increase the capability for rapid storage, onward movement and distribution.

2. **Ship to shore Delivery Systems:** A rugged, large-capacity, high speed landing craft. The landing craft should be designed to interface efficiently with amphibious assault ships, logistics ships, and logistics units ashore.

a. A new-design logistics aircraft. Such a vehicle, perhaps a fixed-wing STOL or a crane-type, heavy-lift helicopter, would need the capability to routinely move large loads (10 to 15 tons) efficiently from the logistics ship to forces at the outer edge of planned operating distances, such as 200 miles inland, without refueling.

b. Improve high speed, high capacity lighterage capability and use all lines of communication (LOCs), including rivers and waterways.

c. A combination of delivery assets (MV-22, LCAC, CH-53, UAVs, high speed lighterage, etc.) will be required to support OMFTS re-supply requirements.

d. Further test and exploit UAV technologies in logistics applications, particularly in delivering heavy logistics payload.¹

¹ National Research Council, "Naval Expeditionary Logistics: Enabling Operational Maneuver From the Sea", A Study. Committee on Naval Expeditionary Logistics, Naval

3. Restructure MAGTF Operations to reduce requirement ashore.

The OMFTS attributes of "lighter, more maneuverable, less logistics footprint, and flexible sustainment" dictate this. We must build units around core competencies and centralize common CSS functions under the Force Service Support Group (FSSG). Greater efficiency can be achieved by eliminating unneeded redundancies throughout the MAGTF and improved combat effectiveness can be achieved by increasing the use of direct support, and general support CSS elements organized, trained, and equipped.²

Under Ship to Objective Maneuver (STOM), mobile CSSDs must be integrated with maneuver elements and must be capable of moving with or near them in order to provide in-stride logistics support and to be included under their force protection umbrella. In-stride logistics capabilities can be enhanced by fielding a family of multi-purpose, lightweight, air mobile logistics ground vehicles (armored and unarmored) that are as mobile as those employed by (GCE) maneuver elements. In future operations, mobile CSSDs will need the capability to land, move, call for fires, and survive independently.³

Studies Board, (Washington, DC: National Academy Press), 1998, 43.

² U.S. Marine Corps, "Operational Maneuver From the Sea (OMFTS) Working Group (WG) Draft Final Report", (Quantico, VA: Marine Corps Combat and Development Command), 11 Dec 98. IV-2.

³ OMFTS WG Draft Final Report, IV-5.

4. Sea-base Logistic Ships (MOB/MPF). MPF's future will combine the capability and endurance of sea lift with the enhanced speed of airlift to marry-up forces and equipment at sea, thus eliminating the requirement for access to secure ports and airfields in the Littoral Penetration Area (LPA). Marines, Navy and other supporting units will deploy by a combination of surface craft, and strategic, theater, and tactical airlift, to meet prepositioning system/platforms while they are underway and enroute to objective areas.

The system/platform will serve as a sea-based terminal, throughput center, and conduit for logistics support. It must be able to indefinitely receive, store, manage, and deploy the equipment and sustainment for combat operations. This support will flow from bases located in the continental United States or overseas, via the sea base provided by the maritime prepositioning force, to the MAGTF conducting operations ashore or at sea.⁴

This is not a revolution in amphibious doctrine, it is an evolution. The Navy and Marine Corps can currently

⁴ U.S. Marine Corps, "Mission Need Statement (MNS) for Maritime Prepositioning Force for the 21st Century (MPF FUTURE)," Quantico, VA: Marine Corps Combat Development Command), 1999, 1-2.

accomplish sea-based logistics with minimal conventional threat or in operations other than war. OMFTS requires consolidation of logistics procedures so that each element (Navy and Marine Corps) can benefit from the others' strengths in developing amphibious doctrine for the future. Navy logisticians' expertise lies in their understanding of operational level logistics, while Marine Corps logisticians' expertise lies in their tactical level logistics. Combined, they can provide OMFTS commanders the combat sustainment that allows domination on the battlefields of the future.

APPENDIX A

ACRONYMS

AAAV	Advanced Amphibious Assault Vehicle
ARG	Amphibious Ready Group
BSA	Beach Support Area
CONUS	Continental United States
CSS	Combat Service Support
FM	Field Manual (Army)
FMFM	Fleet Marine Field Manual (Marine Corps)
FSSG	Force Service Support Group
GCCS	Global Command Control System
GCE	Ground Combat Element
GCSS	Global Combat Service Support
JLOTS	Joint Logistics Over the Shore
JSF	Joint Strike Fighter
LCAC	Landing Craft Air Cushion
LF	Landing Force
LOC	Lines of Communication
LPA	Littoral Penetration Area
MAGTF	Marine Air-Ground Task Force
MCCDC	Marine Corps Combat Development Command
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MOB	Mobile Offshore Base
MPF	Maritime Preposition Force
NEF	Naval Expeditionary Force
OMFTS	Operational Maneuver From the Sea
PGM	Precision Guided Munitions
SBL	Sea Based Logistics
STOL	Ship to Objective Logistics
STOVL	Short Take-off and Vertical Landing
UAV	Unmanned Aerial Vehicle
WMD	Weapons of Mass Destruction

APPENDIX B

TIMELINE OF DEVELOPMENTS IN SEA-BASED LOGISTICS

1930s	Initial concept for providing logistic support from floating mobile bases
1943	Preparatory period for seizing Tarawa in Operation Galvanic - Squadron Four, under Captain Skull, USN, organizes two mobile support squadrons which alternate establishing bases and advancing to the next objective, supporting each other in a leap-frog effect.
1973-75	Mobile Sea-base Concept studied.
1980-1990's	Sea-basing and OMFTS concept studies ongoing.

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The reference material utilized has focused on books, periodical articles, Joint doctrinal publications, Army, Navy and Marine Corps doctrinal publications, Navy and Marine Corps wargames, and reports, studies and papers on the subject of Sea Based Logistics.

(1) The wargames conducted by the United States Navy and Marine Corps Combat Development Command stressed the integration of operations in littoral and expeditionary sea based logistics. The wargame scenario timeline takes place between March 2005 and December 2007. It is composed of a series of Operations Other Than War (OOTW), Other Expeditionary Operations (OEO), and Lesser Regional Contingency (LRC), and Major Theater Warfare (MTW).¹ All the wargame scenarios impacted on logistic support with regard to force structure operational logistics, human resources, and future technology.

(2) The research of articles and papers focused on OMFTS stressing firepower and maneuver with little emphasis on the limitations infused by logistic constraints. Since OMFTS changed the operations of amphibious doctrine,

¹ U.S. Naval War College, *Naval Logistics Wargame 2007 (6-10 October 1997) Executive Summary*, Newport, RI. 1997, 3.

logistic doctrine and equipment must expand to support OMFTS.

(3) The Marine Corps Warfighting Lab has studied the support concepts for OMFTS and ship-to-objective-maneuver (STOM) in a littoral environment. The end state of Logistic Support for OMFTS is to reduce the combat service support ashore. The development of future expeditionary logistics is studied in a process known as Sea Dragon, which provides identification and introduction of capabilities to support future doctrine.

(4) Current Marine Corps OMFTS Doctrine utilizes Marine Air Ground Task Force (MAGTF) combined arms penetration, and exploitation operations from over the horizon at sea directly to the accomplishment of objectives ashore without stopping to seize, defend, and build up traditional combat service support locations.

(5) The Center for Naval Analysis (CNA) review of Sea Based Logistics points to structural problems of support rather than procedural problems. These structural problems include equipment mismatches, i.e. increased numbers of large assault ships to support increased air operations. The focus of sea based logistics is governed by immutable laws. Material has mass and the movement of mass requires effort. The movement of mass over distance requires time, which is determined by speed of movement.² OMFTS is

² Major Bruce K. Bancroft, USMC, *Sea Based Logistics in Operational Maneuver from the Sea*, Unpublished research paper

shifting the focus from logistic sustainment to distribution and storage techniques.

The research of the *Marine Corps Sea Based Logistics and Maritime Prepositioning force 2010 and Beyond War Game Series*, (Marine Corps Combat Development Command, 1998), resulted in the most concise descriptions of the purpose of Sea Based Logistics. The Wargame Series explored the means of executing Sea Based Logistics and the Maritime Preposition Force in an operational context. Discussion on difficulty in moving large quantities of fuel long distances, and heavy equipment transport provide and effective argument on the problems faced in using Sea Based Logistics in wartime. Air Support is key, but requires adequate and flexible space. These and other scenarios have effectively brought relevant issues into view for further analyses. Further, the *Naval Logistics Wargame 2007 (6-10 October 1997) Executive Summary*, of the United States Naval War College, Newport, Rhode Island provides a focused assessment of Naval Logistics Doctrine, Organization, and Execution capabilities. Several advances were made in this wargame in the areas of modeling, assessment of expeditionary sea based logistics concepts to support

no. ADA307498 . (Newport, RI: Naval War College, June 1996), 6.

littoral operations, and Naval integration of Joint concepts and doctrine.

The Marine Corps' MCDP 4, *Logistics* (1997) describes how ships can be used as both "a means of moving supplies into a theater of operations and as mobile warehouses for resupply within a theater." The current U.S. Marine Corps concept of (STOM) also emphasizes sea based logistics. The establishment of a logistics base ashore is seen as an undesirable "operational pause." While they acknowledge the challenge involved, they maintain that the problem may be overcome by tailored logistics packages delivered to the using element. Just how these tailored packages are delivered is still an unsolved issue and one this study will pursue.

Complete historic analysis of logistics principles that impact the establishment of operational doctrine is found in *Logistics in the National Defense* by Rear Admiral Henry E. Eccles, USN, (Ret). Logistics is defined as the means to create and to support combat forces. "Logistics is the bridge between the national economy and the operation of combat forces. Thus, in its economic sense it limits the combat forces which can be created; and in its operational sense it limits the forces which can be employed." Admiral Eccles pointed out the steps required to develop effective logistic systems in support of operational doctrine. The

logistic principles he laid out in 1959 are applicable today as we develop warfighting methods for the future.

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